

REMARKS

Favorable reconsideration of this application is respectfully requested in view of the amendments above and the following remarks. By virtue of the claim amendments, Claims 13 and 14 have been canceled without prejudice or disclaimer of the subject matter contained therein. In addition, Claims 1, 4, 9, and 15 have been amended and Claims 16-21 have been added. Therefore, Claims 1-12 and 15-21 are currently pending in the present application.

No new matter has been introduced by way of the claim amendments or additions, entry thereof is therefore respectfully requested.

Information Disclosure Statement

At the outset, the indication that the Information Disclosure Statements filed on September 28, 2001 and July 28, 2003 have been considered is noted with appreciation.

Claim Rejection Under 35 U.S.C. §112, first paragraph

The Official Action sets forth a rejection of Claims 1, 4, 7, 10, 13 and 14 under 35 U.S.C. §112, first paragraph. More particularly, the Official Action states the “specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with” Claims 1, 4, 7, 10, 13 and 14. The Official Action also asserts that “[t]he general fuel additives necessitated by the independent claims are broader than the enabling disclosure...[t]he specification does not enable such broad limitations...” This rejection is respectfully traversed because Claims 1, 4, 7, 10, 13 and 14 do comply with the provisions of 35 U.S.C. §112, first paragraph.

The first paragraph of 35 U.S.C. §112 requires that the specification enable any person skilled in the art to which it pertains to make and use the invention. In the instant case, the specification does provide adequate disclosure to enable any person skilled in the art to make and use the invention. For instance, with respect to Claims 1, 13, and 14, the specification states that “hemoglobin may be used as a fuel additive to prevent CO poisoning of Pt based catalyst.”

With respect to Claims 4, 13, and 14, the specification provides a number of fuel additives to increase wettability of a liquid-type fuel cell electrode. For instance, the specification states that the fuel additive may comprise a plurality of various surfactants.

With respect to Claims 7, 13, and 14, the specification provides examples of a number of fuel additives that reduce dissolved oxygen in the fuel of a liquid-type fuel cell. For example, the specification states that the fuel additive may be an oxygen scavenger that includes, for instance, sodium sulfite, sodium bisulfite, ascorbate, hydrazine, hydroquinone, benzmay, and sulfhydryl compounds.

With respect to Claims 10, 13, and 14, the specification provides a number of fuel additives to remove metal ions that are detrimental to the catalyst or electrolyte. For instance, the specification states that the fuel additive may be a chelating agent and provides examples of suitable chelating agents.

In addition, it is respectfully submitted that the basis for rejecting Claims 1, 4, 7, 10, 13, and 14 is improper. The first paragraph of 35 U.S.C. §112 does not require that the claims include each and every possible element capable of being employed in the claimed invention. Instead, the first paragraph of 35 U.S.C. §112 merely includes a requirement that the specification be enabling. As set forth hereinabove, the specification of the present

application contains sufficient disclosure to enable one skilled in the art to which it pertains to make and/or use the invention as set forth in Claims 1, 4, 7, 10, 13, and 14.

Accordingly, the Examiner is respectfully requested to withdraw the rejection of Claims 1, 4, 7, 10, 13, and 14 as failing to comply with the provisions set forth in 35 U.S.C. §112, first paragraph.

Claim Rejection Under 35 U.S.C. §112, second paragraph

The Official Action sets forth a rejection of Claims 1-14 under 35 U.S.C. §112, second paragraph as allegedly failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. More particularly, the Official Action states that the term “liquid-type” is unclear and therefore renders the term vague and indefinite. This rejection is respectfully traversed because the term “liquid-type” does not render Claims 1-14 indefinite.

As stated in the Official Action, “when considering the liquid-type fuel cell definition of the instant disclosure, all fuel cells are liquid-type fuel cells because they are equipped to employ liquid or gaseous fuel with minor modifications.” It is evident from this statement that the Examiner understands the meaning of the term “liquid-type”. In addition, as may be reasonably interpreted from the background section of the present application, liquid-type fuel cells may be defined as fuel cells that employ liquid fuel. The Official Action argues that this definition of fuel cells is repugnant to terms in the art because, according to the Official Action, “[f]uel cells are categorized according to the type of electrolyte...used to accommodate ion transfer during operation.” The Applicants respectfully disagree with this assertion.

More particularly, it is respectfully submitted that one of ordinary skill in the art would readily know the definition of the term “liquid-type” as applied to fuel cells. This is evident, for instance, by the discussion contained in the Official Action, which states that liquid-type fuel cells are those that employ liquid or gaseous fuel. In addition, one of ordinary skill in the art would recognize from a reading of the present application, the definition of liquid-type fuel cells as stated in the present application. Therefore, the term “liquid-type” should be afforded its broadest reasonable interpretation. In this case, liquid-type fuel cells should not be limited beyond fuel cells that employ liquid or gaseous fuel.

The Official Action appears to argue that the breadth of the term “liquid-type” is over-encompassing as it may be defined to include a large number of various fuel cell types. It is respectfully submitted that this is not a proper standard for rejection language under the provisions set forth in the second paragraph of 35 U.S.C. §112. Instead, because the definition of the term “liquid-type” is known to those of ordinary skill in the art, even if the scope to which the term applies is relatively large, this term does not fail to comply with the second paragraph of 35 U.S.C. §112. Accordingly, the Examiner is respectfully requested to withdraw the rejection of Claims 1-14 as being vague and indefinite.

Claim Rejection Under 35 U.S.C. §102

The test for determining if a reference anticipates a claim, for purposes of a rejection under 35 U.S.C. § 102, is whether the reference discloses all the elements of the claimed combination, or the mechanical equivalents thereof functioning in substantially the same way to produce substantially the same results. As noted by the Court of Appeals for the Federal Circuit in *Lindemann Maschinenfabrick GmbH v. American Hoist and Derrick Co.*, 221

USPQ 481, 485 (Fed. Cir. 1984), in evaluating the sufficiency of an anticipation rejection under 35 U.S.C. § 102, the Court stated:

Anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim.

Therefore, if the cited reference does not disclose each and every element of the claimed invention, then the cited reference fails to anticipate the claimed invention and, thus, the claimed invention is distinguishable over the cited reference.

U.S. Patent No. 6,294,821 to Heller

Claims 1, 2, and 14 have been rejected under 35 U.S.C. §102(e) as allegedly being anticipated by the disclosure contained in Heller. Claim 14 has been canceled by the amendments to the claims above. Therefore, the rejection of Claims 1 and 2 will be addressed hereinbelow. It is respectfully submitted that this rejection is improper because the claimed invention as set forth in Claim 1, as amended, and the claims that depend therefrom are patentably distinguishable over the disclosure contained in the Heller document.

Claim 1, as amended, pertains to a method for improving performance of liquid-type fuel cells. In the method, a liquid-type fuel cell having a fuel and a platinum-based catalyst is provided. In addition, a fuel additive is incorporated into the fuel to reduce CO poisoning to the platinum-based catalyst.

Heller discloses a fuel cell comprising biological fluid as the fuel for the fuel cell. Heller, however, does not disclose that the fuel cell contains a platinum-based catalyst. Heller also does not disclose that a fuel additive to reduce CO poisoning to the platinum-based catalyst is incorporated into the fuel. In this regard, the Heller fails to anticipate the

claimed invention as set forth in Claim 1 because Heller does not disclose each and every element of Claim 1 of the present invention. The Official Action has, therefore, failed to meet the requirements of anticipation under 35 U.S.C. § 102.

Accordingly, at least by virtue of the failure in the disclosure of Heller to include all of the features contained in Claim 1 of the present invention, Heller cannot anticipate Claim 1, and, thus, the claimed invention as set forth in Claim 1 is distinguishable over Heller. Claims 2, 3, and 15 depend upon allowable Claim 1 and are also allowable at least by virtue of their dependencies.

U.S. Patent Publication No. 2001/0038934 to Berlowitz et al.

Claims 1, 4-6, and 14 have been rejected under 35 U.S.C. §102(e) as allegedly being anticipated by the disclosure contained in Berlowitz et al. Claim 14 has been canceled by the amendments to the claims above. Therefore, the rejection of Claims 1 and 4-6 will be addressed hereinbelow. It is respectfully submitted that this rejection is improper because the claimed invention as set forth in Claims 1 and 4, as amended, and the claims that depend therefrom are patentably distinguishable over the disclosure contained in the Berlowitz et al. document.

Berlowitz et al. discloses a fuel cell system that uses an emulsified fuel. Berlowitz et al. discloses that a “fuel and water emulsion is capable of supplying the necessary amount of water needed to perform the steam reforming and/or water gas shift reaction to decrease or eliminate the CO produced concomitantly with hydrogen production. (paragraph 9 of Berlowitz et al.).

Berlowitz et al., however, fails to disclose that the fuel cell system includes a platinum-based catalyst as set forth in Claim 1 of the present invention. In addition, Berlowitz et al. fails to disclose that the fuel cell has a liquid-catalyst interface and that a fuel additive is incorporated into the fuel to decrease interfacial tension of the liquid-catalyst interface as set forth in Claim 4 of the present invention. Berlowitz et al., therefore, cannot anticipate Claims 1 or 4 of the present invention.

Accordingly, at least by virtue of the failure in the disclosure of Berlowitz et al. to include each and every feature contained in Claims 1 and 4 of the present invention, Berlowitz et al. cannot anticipate Claims 1 or 4, and, thus, the claimed invention as set forth in Claims 1 and 4 is distinguishable over Berlowitz et al. Claims 2, 3, and 15 depend upon allowable Claim 1 and Claims 5, 6, 16, and 17 depend from allowable Claim 4 and are also allowable at least by virtue of their dependencies.

U.S. Patent No. 6,331,220 to Wagaman

Claims 4-14 have been rejected under 35 U.S.C. §102(e) as allegedly being anticipated by the disclosure contained in Wagaman. Claims 13 and 14 have been canceled by the amendments to the claims above. Therefore, the rejection of Claims 4-12 will be addressed hereinbelow. It is respectfully submitted that this rejection is improper because the claimed invention as set forth in Claims 4, 7 and 10 and the claims that depend therefrom are patentably distinguishable over the disclosure contained in the Wagaman document.

Wagaman pertains to gas-generating liquid compositions which may be used in fuel cells. (col. 3, lines 50-51). Wagaman, however, does not specifically disclose a liquid-type fuel cell having an electrode and a fuel. Nor does Wagaman disclose the incorporation of a

fuel additive to a fuel to increase wettability of the electrode and to decrease interfacial tension of a liquid-catalyst interface as set forth in Claim 4 of the present invention.

Wagaman also fails to disclose that a liquid-type fuel cell having a fuel is provided and that a fuel additive to reduce dissolved oxygen in the fuel is incorporated into the fuel as set forth in Claim 7 of the present invention. Wagaman further fails to show that a liquid-type fuel cell having a fuel, a catalyst, and electrolyte is provided and that a fuel additive to remove metal ions that are detrimental to the catalyst or electrolyte is incorporated into the fuel as set forth in Claim 10 of the present invention.

Accordingly, at least by virtue of the failure in the disclosure of Wagaman to include all of the features contained in Claims 4, 7, or 10 of the present invention, Wagaman cannot anticipate Claims 4, 7, or 10 and, thus, the claimed invention as set forth in Claims 4, 7, and 10 is distinguishable over Wagaman. The claims that depend upon allowable Claims 4, 7, and 10 are also allowable at least by virtue of their dependencies.

Claim Rejection Under 35 U.S.C. §103

The test for determining if a claim is rendered obvious by one or more references for purposes of a rejection under 35 U.S.C. § 103 is set forth in MPEP § 706.02(j):

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Therefore, if the above-identified criteria are not met, then the cited reference(s) fails to render obvious the claimed invention and, thus, the claimed invention is distinguishable over the cited reference(s).

The Official Action sets forth a rejection of Claim 3 under 35 U.S.C. §103(a) as allegedly being unpatentable over the disclosure contained in Heller. This rejection is respectfully traversed because Heller fails to disclose the claimed invention as set forth in Claim 3.

The Official Action correctly notes that Heller fails to disclose that the amount of hemoglobin is in the range of 0.0001-1% by weight as set forth in Claim 3 of the present invention. In an effort to make up for this deficiency, the Official Action asserts that it would have been obvious to one of ordinary skill in the art to employ the hemoglobin in these amounts on the basis that “discovering the optimum or working ranges involves only routine skill in the art.” The Applicants respectfully disagree with this assertion because there is nothing to show that the fuel cell disclosed in Heller would operate under these conditions and therefore there is no motivation to modify Heller in the manner suggested in the Official Action.

In addition, it is respectfully submitted that the proposed modification of Heller would not yield the present invention as set forth in Claim 3 of the present invention. For instance, even assuming for the sake of argument that it would have been obvious to modify Heller to include the features of Claim 3 of the present invention, the proposed modification would still fail to disclose all of the elements as set forth in Claim 1 of the present invention.

Accordingly, Claim 3 of the present invention is patentably distinguishable over the disclosure contained in Heller. The Examiner is therefore respectfully requested to withdraw the rejection and to issue an allowance of Claim 3.

Claim 15

The Official Action Summary states that Claim 15 has been rejected. However, there are no direct recitations or rejections of Claim 15 in the Official Action. Therefore, it is assumed that Claim 15 is allowable over the cited art of record.

Newly Added Claims

Claims 16-21 have been added to further define the invention. Claims 16-21 are allowable for at least the reasons set forth above with respect to Claims 1, 4, 7, 10, and 15.

Conclusion

In light of the foregoing, withdrawal of the rejections of record and allowance of this application are earnestly solicited.

Should the Examiner believe that a telephone conference with the undersigned would assist in resolving any issues pertaining to the allowability of the above-identified application, please contact the undersigned at the telephone number listed below. Please

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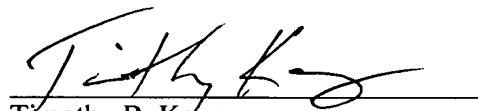
grant any required extensions of time and charge any fees due in connection with this request to deposit account no. 08-2025.

Respectfully submitted,

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